

Patent Claims

1. Method for the production of a cast component, in particular a gas turbine component,

5 characterized by the following steps:

a) Provision of a melting crucible and at least one semi-finished product made of an intermetallic titanium-aluminum material;

10 b) Melting of the semi-finished product or each semi-finished product made of the intermetallic titanium-aluminum material in the melting crucible;

c) Adding of at least one additional element or one additional compound to the molten mass, wherein the element or each element and/or the compound or each compound is added
15 to the molten mass based on its melting temperature;

d) Provision of a casting mold;

e) Pouring the molten mass into the casting mold;

f) Hardening of the molten mass in the casting mold;

g) Removal of the cast component from the casting mold.

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2. Method according to claim 1, characterized in that

a plurality of additional elements or additional compounds are added successively in time to the molten mass depending
25 on their melting temperature.

3. Method according to claim 2, characterized in that

30 refractory additional elements or compounds are added first to the molten mass, followed by volatile additional elements or compounds and, and then fine materials as necessary.

4. Method according to claim 3, characterized in that

35 tungsten, tantalum, niobium and, if necessary, titanium or alloys of these elements are added to the molten mass as refractory additional elements.

5. Method according to claim 3 or 4,
characterized in that
manganese or an alloy of this element is added to the molten
5 mass as volatile additional element.

6. Method according to one or more of claims 3 to 5,
characterized in that
titanium boride is added to the molten mass as fine material.

7. Method according to one or more of claims 1 to 6,
characterized in that
the element or each element and/or the compound or each
component is added to the molten mass in defined doses and/or
15 amounts, wherein the respective dose and/or amount is
measured such that, assuming a molten mass temperature prior
to the addition, the temperature is always greater than 1550°
C after the addition, and the temperature before the addition
will be reached again after a maximum of 15 minutes.

8. Method according to one or more of claims 1 to 7,
characterized in that
the additional element or each additional element and/or the
additional compound or each additional compound is added to
25 the molten mass in defined doses and/or amounts, wherein the
respective dose and/or amount has a maximum weight of 250 g
at an element and/or compound density of greater than 6
g/cm³.

9. Method according to one or more of claims 1 to 8,
characterized in that
the additional element or each additional element and/or the
additional compound or each additional compound is added to
the molten mass in defined doses and/or amounts, wherein the
35 respective dose and/or amount has a maximum weight of 50 g at
an element and/or compound density of less than 6 g/cm³.

10. Method according to one or more of claims 1 to 9,
characterized in that
the additional element or each additional element and/or the
additional compound or each additional compound is added to
5 the molten mass in a defined, flow-optimized geometry.

11. Method according to claim 10,
characterized in that
the flow-optimized geometry enables good transportation of
10 the element or each element and/or the compound or each
compound within the molten mass.

12. Method according to one or more of claims 1 to 11,
characterized in that
15 the element or each element and/or the compound or each
compound is performed during the melting process.

13. Method according to one or more of claims 1 to 11,
characterized in that
20 during the melting process, the melting crucible is
inductively warmed up and/or heated and with this also the
semi-finished product or each semi-finished product and the
element or each element, and the compound or each compound to
be melted in the melting crucible.

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